

What is claimed is:

1. An abrasive article comprising:

(a) a lofty, three-dimensional, non-woven web of interlaced fibers having a major surface;

5 (b) abrasive particles attached to said fibers;

(c) a binder bonding the fibers to one another at their mutual contact points and attaching said abrasive particles to said fibers; and

(d) wherein a portion of the web of fibers is preformed in a direction away from the major surface of the web of fibers, said preformed portion of the web of fibers having
10 sufficient rigidity to maintain said portion of the web of fibers in said direction without additional support.

2. The abrasive article of Claim 1, wherein the article is in the shape of a formed disk.

3. The abrasive article of Claim 2, wherein the web of fibers of said formed
15 abrasive disk is substantially uniform in thickness.

4. The abrasive article of Claim 3, for use on a workpiece, wherein said abrasive disk is preformed so that the perimeter region of said disk curves away from the workpiece.

5. The abrasive article of Claim 3, for use on a workpiece, wherein said
20 abrasive disk is preformed to form a substantially convex surface contacting the workpiece.

6. The abrasive article of Claim 5, wherein the perimeter region of the abrasive disk is preformed to curve away from a flat workpiece at a radial rate greater than the radial rate for the remainder of the surface of the disk.

7. The abrasive article of Claim 6, wherein the thickness of the disk is
25 tapered near its perimeter.

8. An abrasive article comprising:

- (a) a lofty non-woven fabric made of interlaced fibers;
- (b) abrasive particles attached to the fibers of the non-woven fabric;
- (c) a binder attaching said abrasive particles to said fibers; and

5 (d) wherein the article is rotatable about an axis of rotation and a portion of the fabric is preformed in a direction away from a plane perpendicular to the axis of rotation, said preformed portion of the fabric having sufficient rigidity to maintain said preformed direction without additional support.

9. The abrasive article of Claim 8, wherein said non-woven fabric is in the
10 shape of a formed disk and the abrasive article is symmetrical about the axis of rotation.

10. The abrasive article of Claim 9, wherein the abrasive article forms a convex working surface relative to a plane perpendicular to the axis of rotation.

11. The abrasive article of Claim 9, wherein said non-woven fabric is substantially uniform in thickness.

15 12. The abrasive article of Claim 11, wherein the perimeter region of said disk is bent from the central region of said disk at a uniform angle relative to the axis of rotation.

13. The abrasive article of Claim 12, wherein said uniform angle is between 0 degrees and 60 degrees.

14. An abrasive article resulting from the steps comprising:

20 (a) heating at least a portion of a lofty non-woven abrasive fabric disk made of a web interlaced fibers, with a binder and abrasive particles attached to the fibers, to its plasticizing temperature;

(b) forming the non-woven abrasive fabric disk into a predetermined three-dimensional shape; and

(c) maintaining the formation of the non-woven abrasive fabric disk while it cools below its plasticizing temperature;

(d) wherein said non-woven abrasive fabric disk having sufficient rigidity after cooling below its plasticising temperature to maintain said three dimensional shape without additional support.

15. The abrasive article of Claim 14, wherein said three-dimensional shape is a mushroom shape;

16. The abrasive article of Claim 1, wherein said direction away from the major surface comprises a direction substantially perpendicular to the major surface.

10 17. An abrasive article comprising:

(a) a lofty, non-woven web of interlaced fibers, the non-woven web having a major surface;

(b) abrasive particles among the fibers of the non-woven web;

15 (c) wherein a portion of the non-woven web is preformed in a direction away from the major surface, said preformed portion of the non-woven web having sufficient rigidity to maintain said preformed direction without additional support.

18. The abrasive article of Claim 17, further comprising a binder attaching said abrasive particles to said fibers.

20 19. The abrasive article of Claim 17, wherein the non-woven web is rotatable about an axis of rotation and wherein the major surface of the non-woven web is substantially perpendicular to the axis of rotation.

20. The abrasive article of Claim 17, wherein the non-woven web has a disk shape and wherein said axis of rotation is along a center axis of the disk shape.

21. The abrasive article of Claim 17, wherein the non-woven web has a disk shape with an outer peripheral edge portion and wherein the preformed portion of the non-woven web comprises the outer peripheral edge portion.